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Milek

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(54) **SEMI-AUTOMATIC HANDGUN**

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(52) **U.S. Cl.** **89/139**; 42/70.02; 42/76.01; 42/10; 42/11; 89/161; 89/145
(58) **Field of Search** 89/139, 160, 161; 42/10, 11

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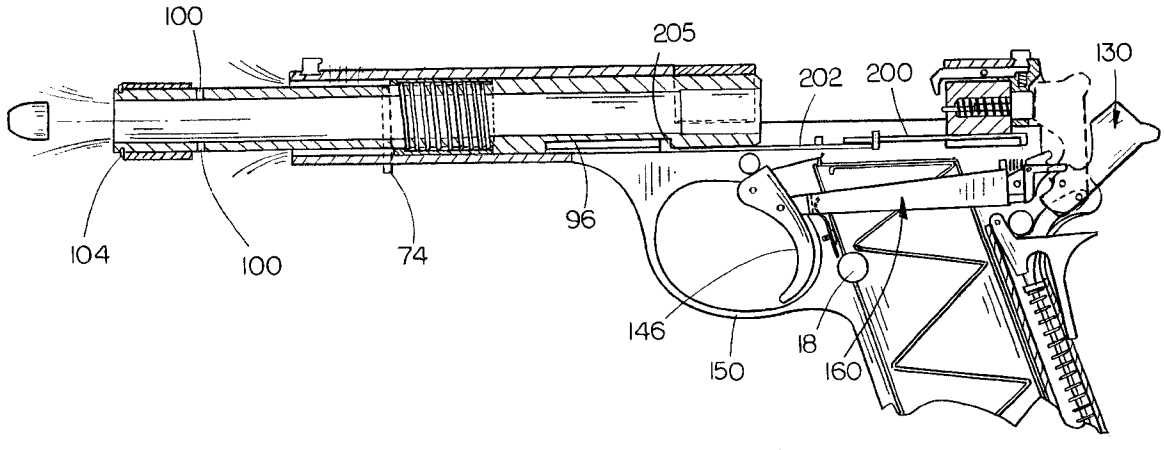
(57) **ABSTRACT**

A semi-automatic handgun is disclosed including a frame having a barrel housing mounted thereon. A barrel is movably mounted on the barrel housing and has a cartridge chamber at its rearward end for receiving a cartridge therein. The barrel is movable between a rearward position and a forward position with respect to the barrel housing and is normally in its rearward position. The barrel moves forwardly in a straight line from its rearward position upon firing of the cartridge in the chamber to counteract the rearward energy of discharge, thereby reducing recoil. The handgun may be fired in either a single action or double action manner. The firing hammer of the handgun is re-cocked, upon firing of the cartridge, by means of a movable piston having a firing pin positioned therein with the firing pin engaging the hammer to move the hammer to its re-cocked position.

14 Claims, 11 Drawing Sheets



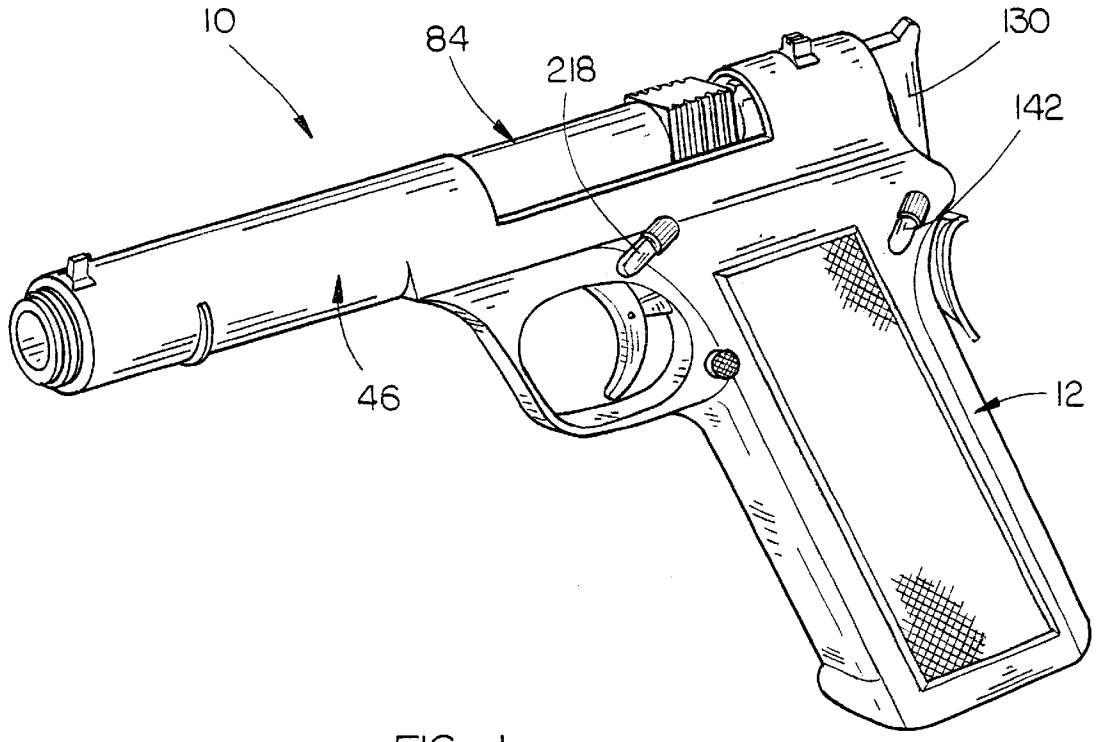


FIG 1

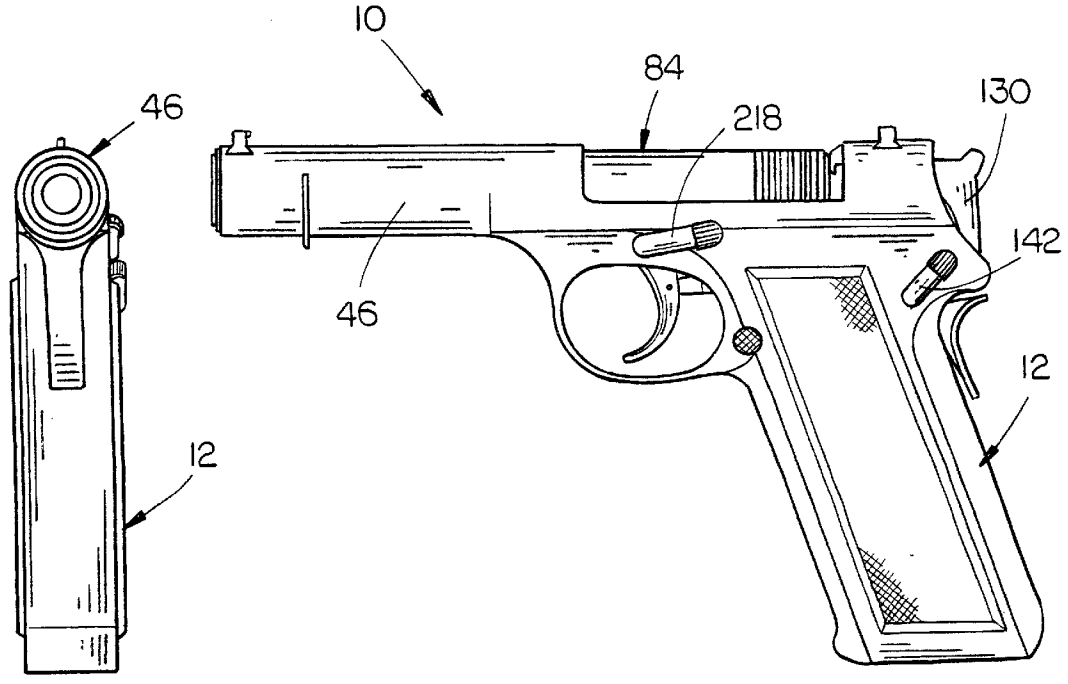


FIG 2

FIG 3

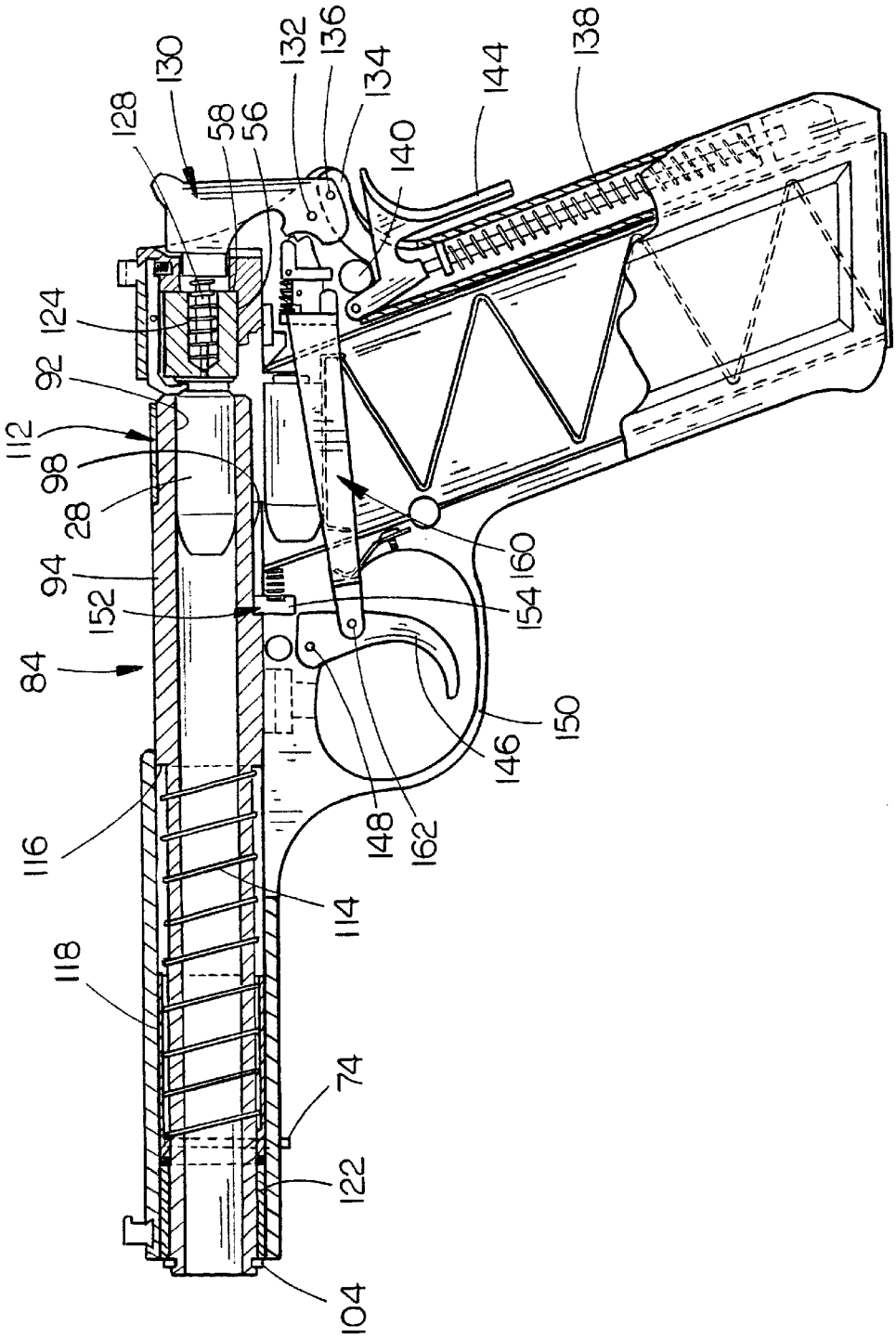

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FIG. 4

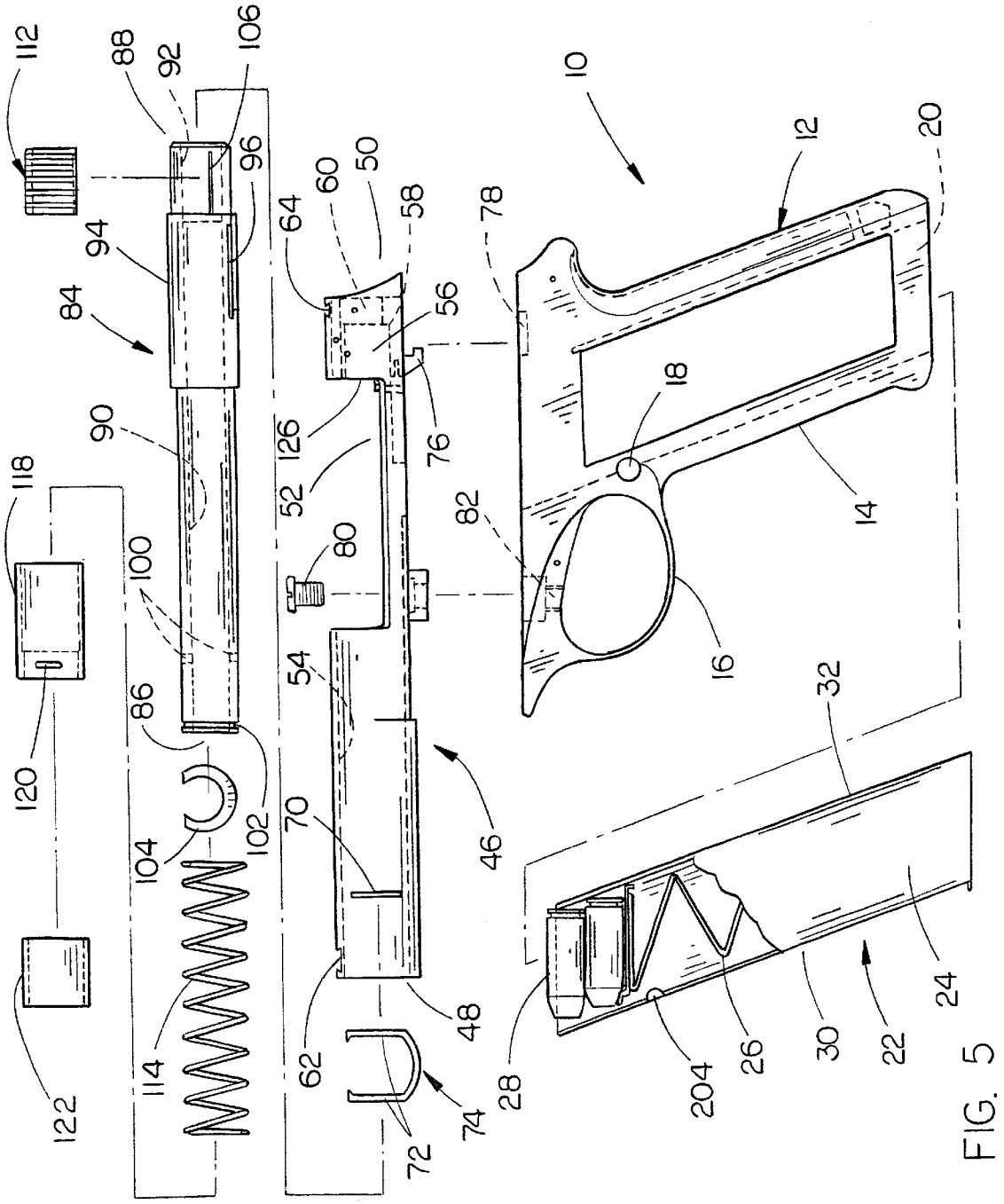
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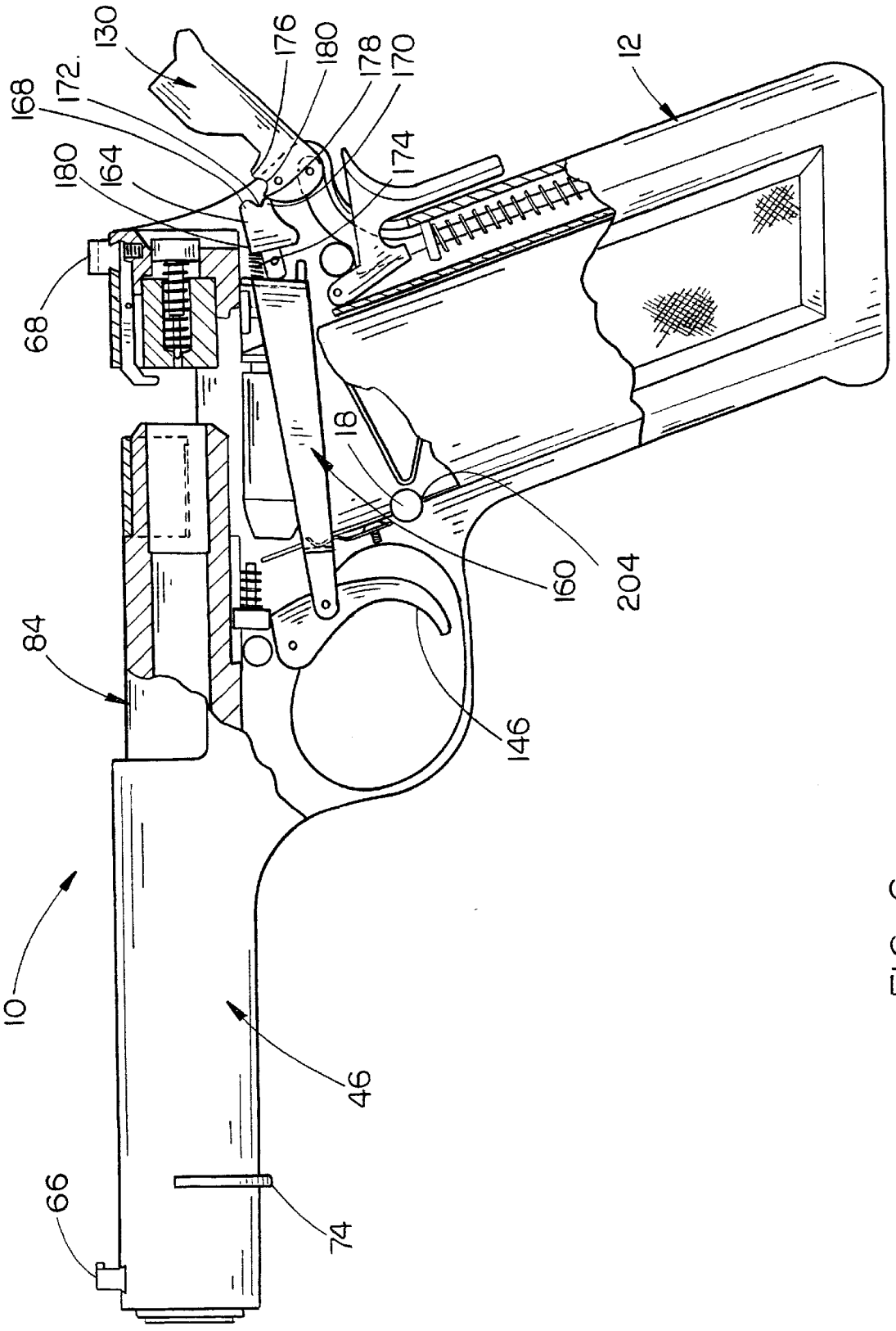
FIG. 5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74

FIG. 6

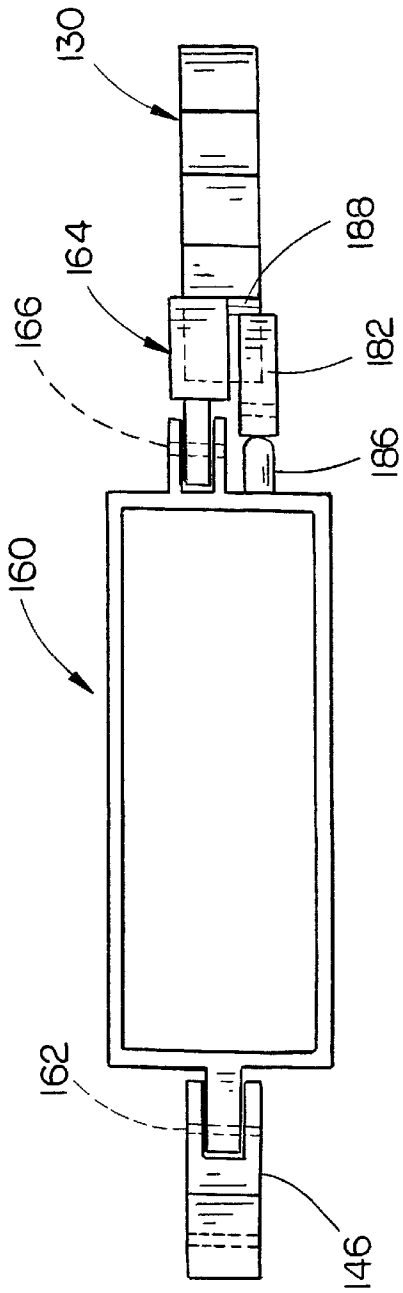
130
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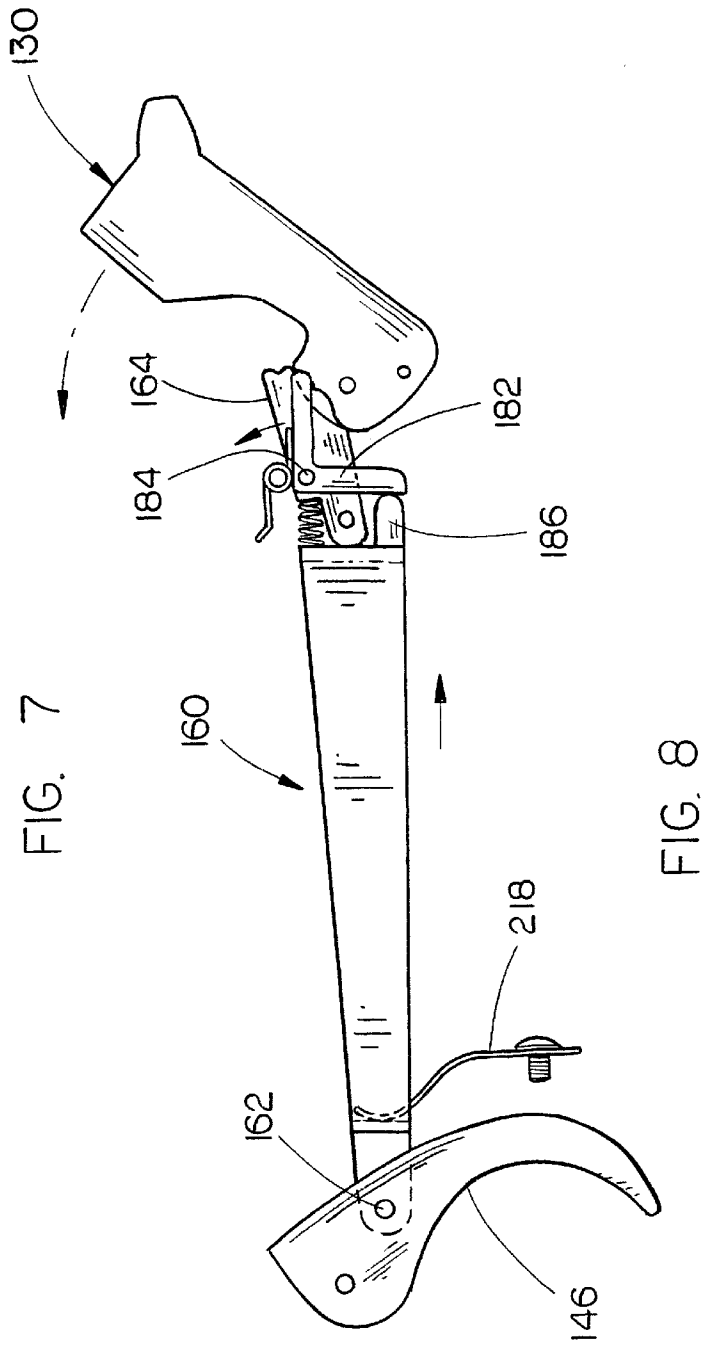
FIG. 7


130
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160
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FIG. 8

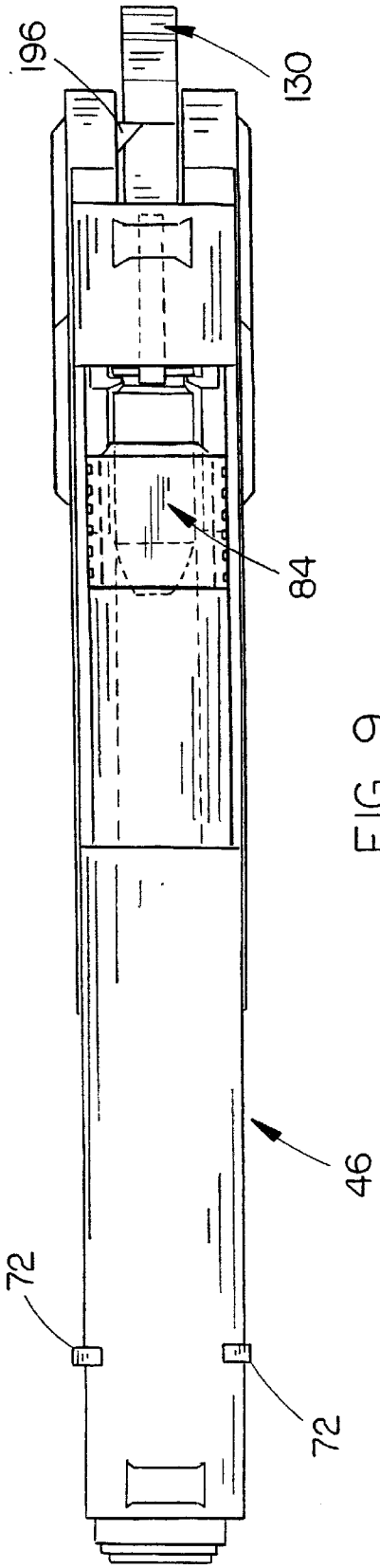

FIG. 9

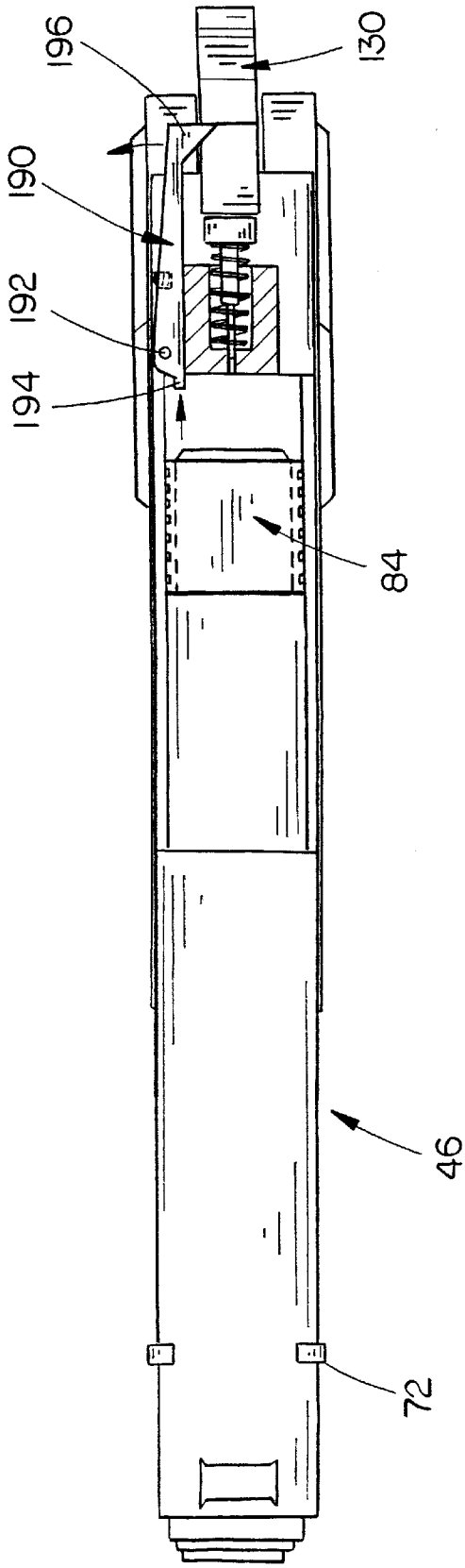

FIG. 10

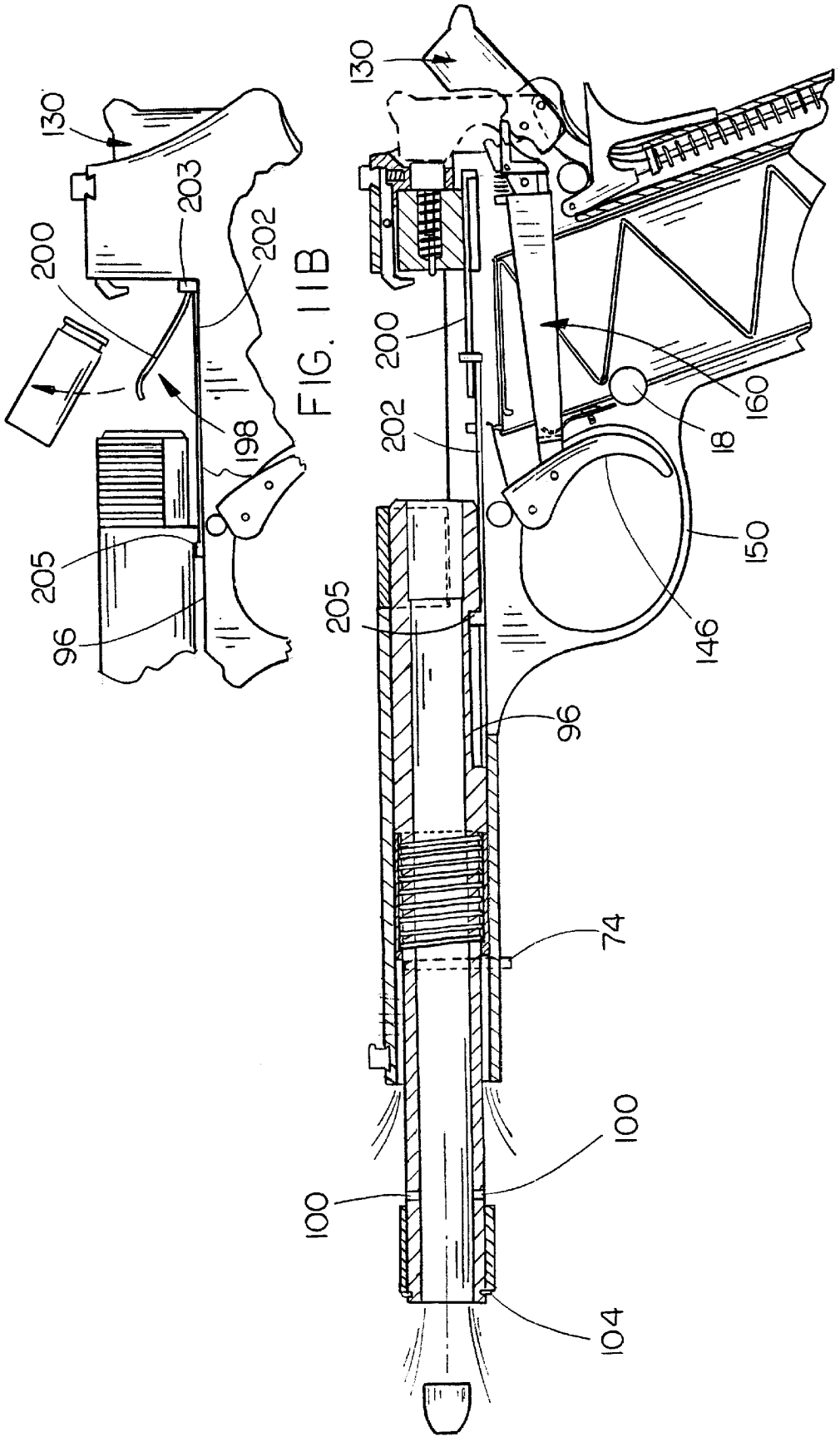

FIG. 11B

FIG. 11A

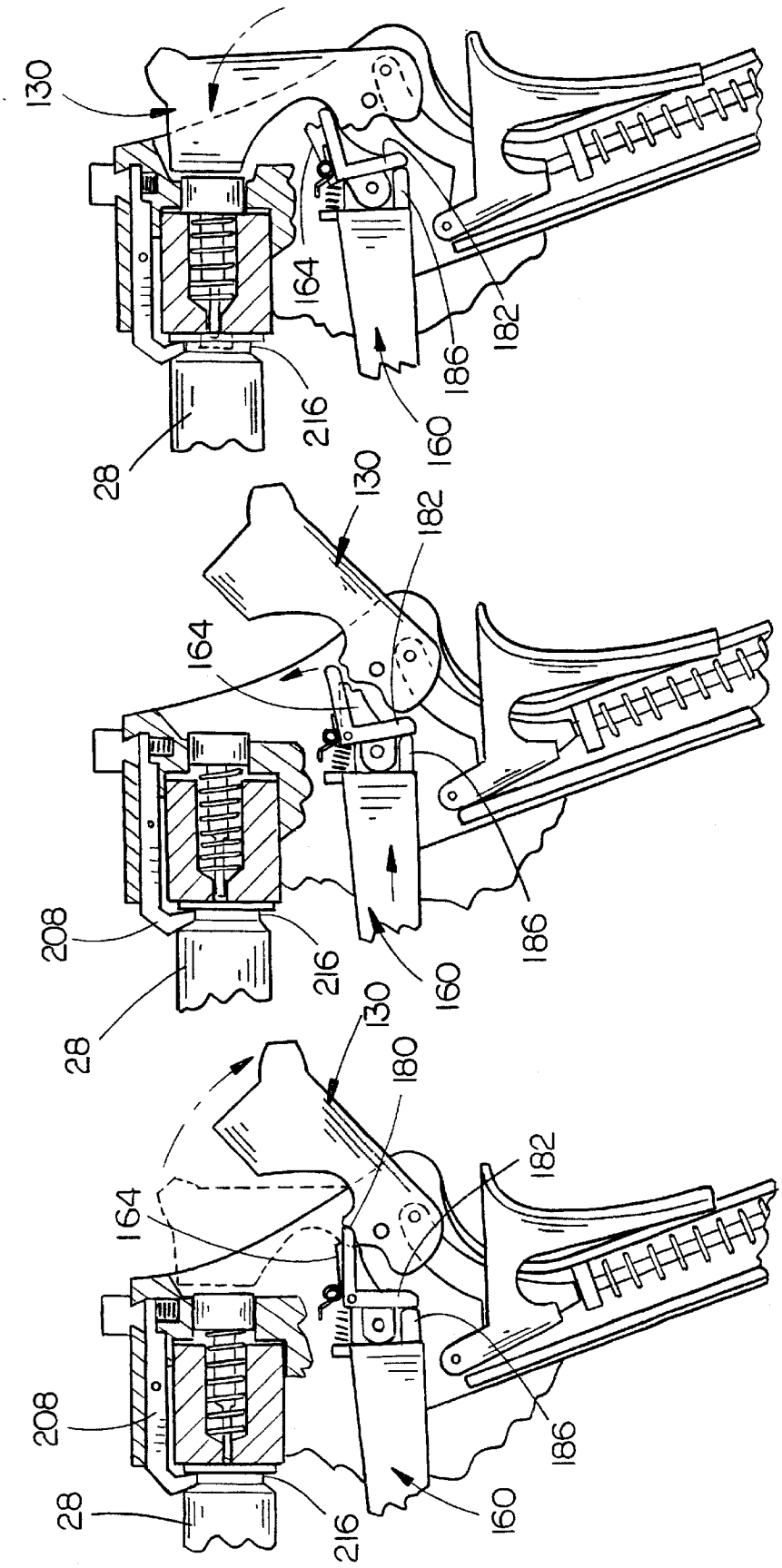

FIG. 12C

FIG. 12B

FIG. 12A

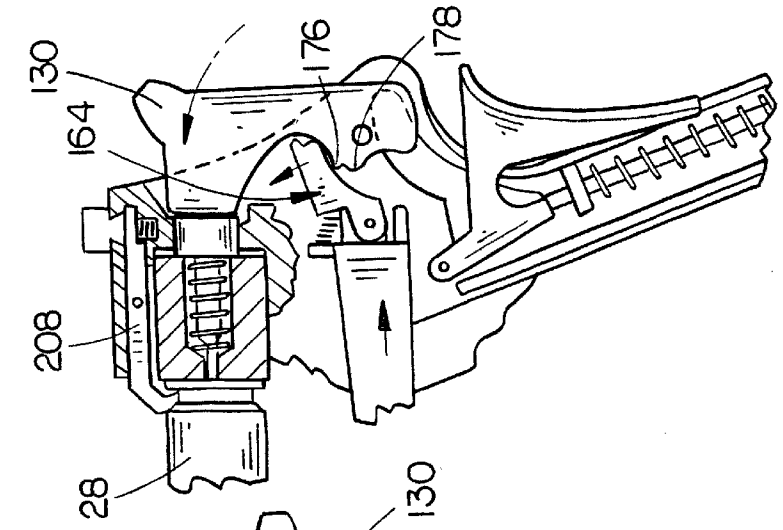

FIG. 13C

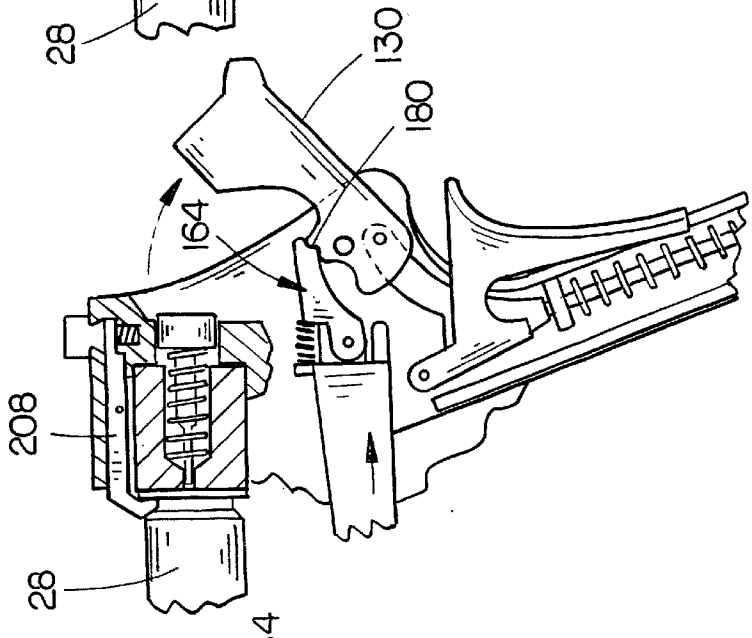

FIG. 13B

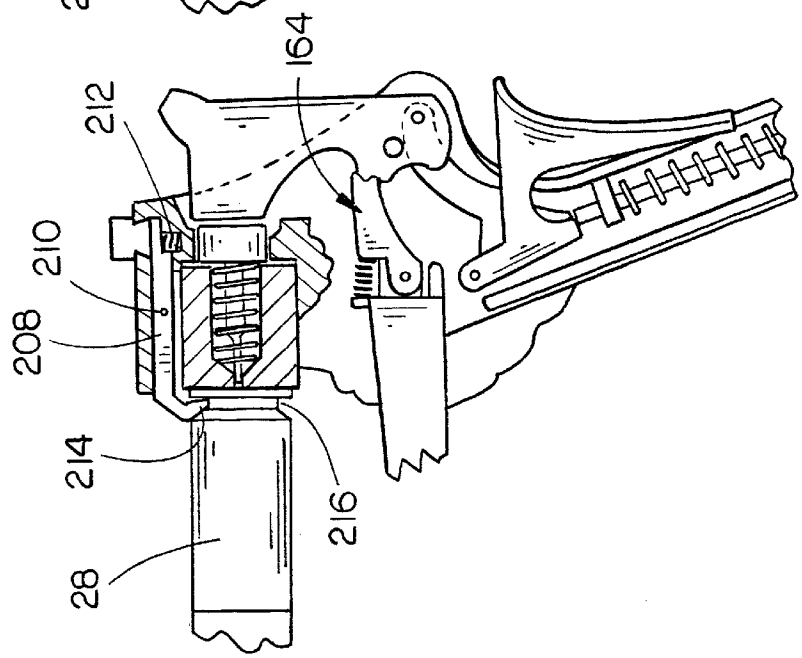

FIG. 13A

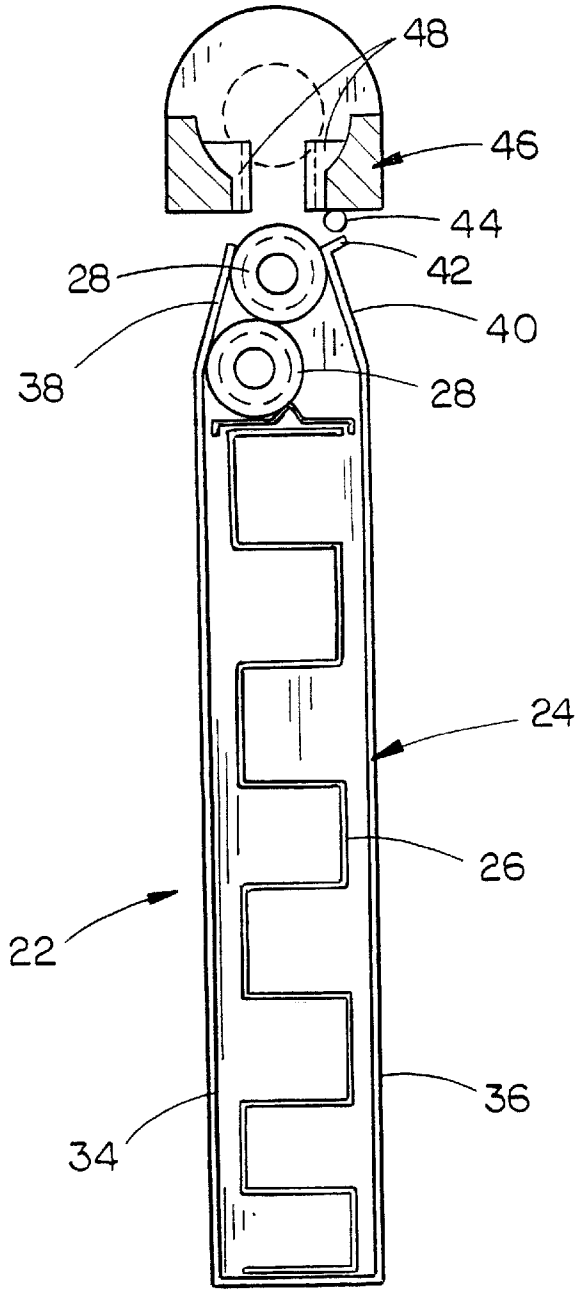

FIG. 14

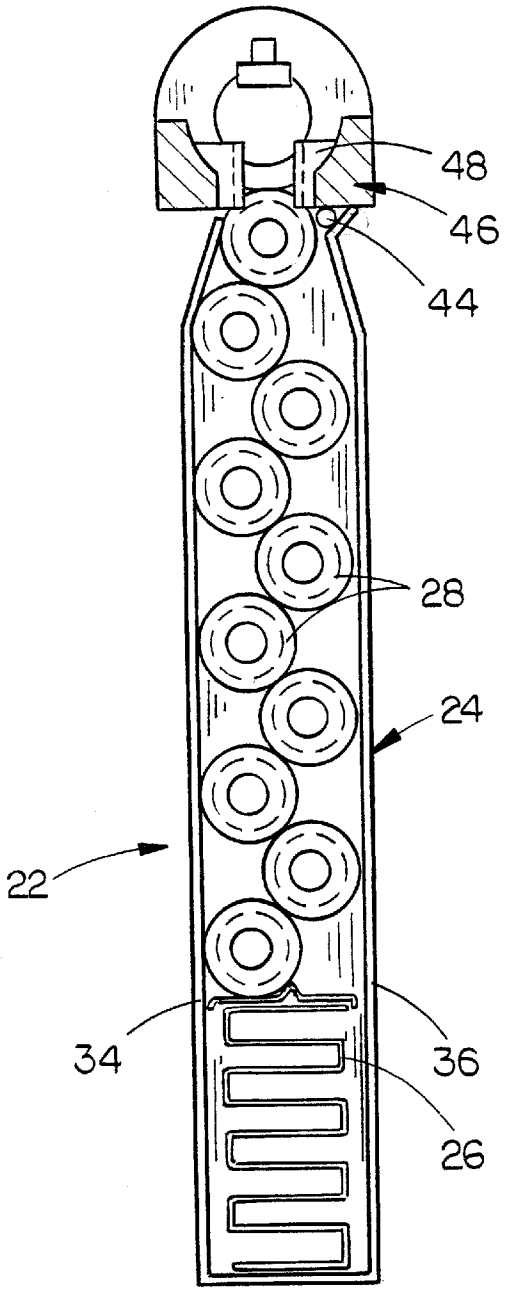

FIG. 15

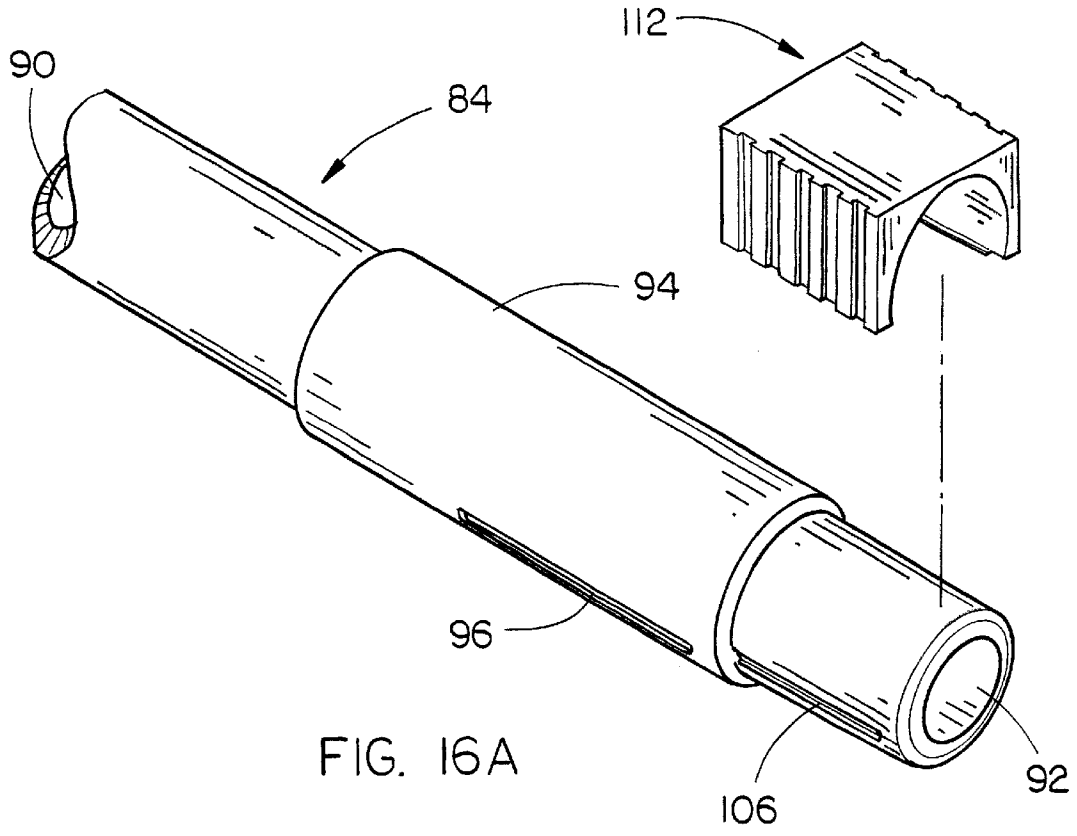

FIG. 16A

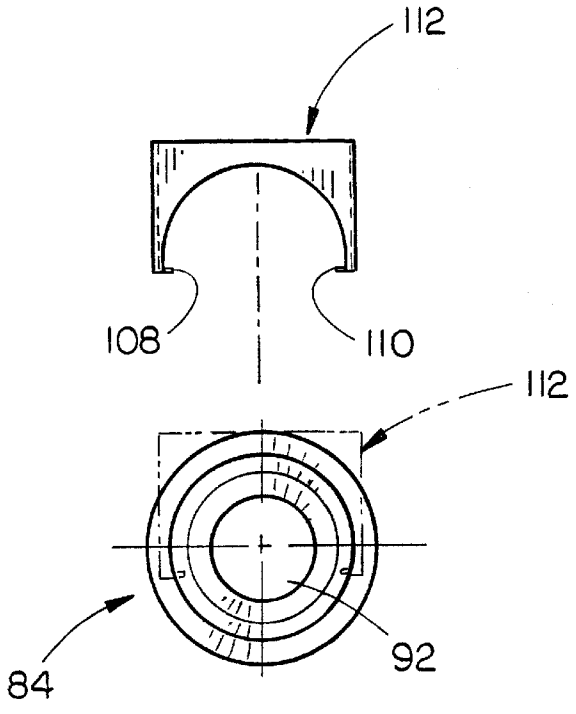

FIG. 16B

SEMI-AUTOMATIC HANDGUN

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a semi-automatic handgun and more particularly to a semi-automatic handgun wherein the barrel thereof moves forwardly with respect to the frame of the handgun when the cartridge in the barrel is fired.

2. Description of the Related Art

The mechanical action of high-powered semi-automatic handguns has changed very little since an invention by John Browning at the turn of the twentieth century. In semi-automatic pistols, such as the Colt 1911 A1 pistol invented by Browning, the recoil action created by the energy of firing a cartridge causes the barrel, which is located in a sliding housing, to move rearwardly and most often tilted downwardly to eject the spent cartridge and to deliver a new round from the cartridge clip or magazine. To prevent excessive blowback at the breech, the barrel and slide are locked together for a short distance to allow the chamber pressure to drop to a safe level before the breech is opened. The higher energy produced by more powerful ammunition results in high velocity of the slide which must be retarded by a strong recoil spring. The strong spring force of the recoil spring requires greater effort in manually retracting the slide to re-cock the hammer and recharge the chamber. As more powerful ammunition has been developed, such as the 10 mm. cartridge, the problem has increased requiring still stronger recoil springs along with more uncomfortable recoil on firing. Further, the fact that the barrel of semi-automatic handguns, such as the 1911 A1 pistol, must be pivoted downwardly necessitates some play between the barrel and the slide through the use of a bushing. The fact that some tolerance must be provided between the barrel and the bushing and due to the fact that wear occurs on the bushing creates accuracy problems. Additionally, since the barrels of semi-automatic handguns such as the 1911 A1 have relatively short lengths, the accuracy thereof is sometimes less than desirable.

SUMMARY OF THE INVENTION

A semi-automatic weapon such as a handgun is disclosed which includes a frame including a grip, a trigger guard, a trigger, and a cartridge magazine removably mounted in the grip. The cartridge magazine is adapted to have cartridges contained therein in a vertically stacked manner. A barrel housing is mounted on the upper end of the frame and has a breech formed therein which has rearward and forward ends. The breech is in communication with the cartridge magazine to enable the cartridge magazine to successively feed cartridges to the breech. The barrel housing has a first elongated opening formed therein which extends forwardly from the forward end of the breech to the forward end of the barrel housing. The barrel housing has a second elongated opening formed therein which extends rearwardly from the rearward end of the breech towards the rearward end of the barrel housing. An elongated barrel, having forward and rearward ends, is movably mounted in the barrel housing between a rearward battery position in the barrel housing to a forward position therein. The barrel has a bore extending therethrough which defines a chamber at the rearward end thereof. A barrel spring is positioned in the barrel housing for yieldably urging the barrel towards its rearward battery position. The barrel closes the breech when the barrel is in its rearward battery position.

A piston is movably mounted in the second elongated opening formed in the barrel housing and is normally urged forwardly by a spring associated therewith. A spring-loaded firing pin is movably positioned in the piston with the forward end thereof protruding beyond the breech face or forward end of the piston with the rearward end thereof protruding rearwardly from the rearward end of the piston. A hammer is pivotally mounted on the frame which is movable between a rearward cocked position and a forward firing or de-cocked position. The trigger is operatively connected to the hammer by means of a sear assembly. A hammer or main spring is positioned in the frame and is connected to the hammer for driving the hammer from its rearward cocked position to its forward firing position when the trigger is depressed. When the hammer is driven forwardly, the hammer strikes the firing pin with the forward end of the firing pin striking the primer of the cartridge located in the chamber of the barrel to detonate the same. The detonation of the cartridge causes the barrel to move from its rearward position to its forward position against the resiliency of the barrel spring. The forward movement of the barrel within the barrel housing reduces the recoil imparted to the frame. The forward movement of the barrel during firing improves the accuracy of the handgun. The cocking of the hammer is achieved by rearward movement of the piston upon firing which imparts energy to the firing pin and in turn to the hammer.

The construction of the cartridge magazine is also believed to be unique in that a flexible cartridge retainer means is provided on the upper end thereof which enables the cartridges to be loaded into the magazine in a straight downwardly fashion. The magazine cartridge feeds the cartridges upwardly in a horizontally disposed position so as to be aligned with the chamber and bore of the barrel. The rearward end of the chamber of the barrel is positioned near the rear of the cartridge magazine which results in an effective longer barrel without increasing the overall length of the weapon which also results in increased energy and velocity.

It is therefore a principal object of the invention to provide an improved semi-automatic handgun.

A further object of the invention is to provide a semi-automatic handgun having a barrel slidably mounted in a barrel housing with the barrel moving forwardly when the handgun is fired.

Yet another object of the invention is to provide a semi-automatic weapon which decreases the amount of recoil imparted to the frame thereof.

Still another object of the invention is to provide a semi-automatic handgun which is constructed so that less force is required to manually open the breech.

Still another object of the invention is to provide a semi-automatic handgun wherein a barrel is slidably mounted in a barrel housing with the barrel moving in a straight line with respect thereto.

Still another object of the invention is to provide a semi-automatic weapon wherein the hammer is re-cocked by means of a movable piston positioned between the rear end of the cartridge in the chamber and the hammer.

Still another object of the invention is to provide a semi-automatic handgun wherein the forward movement of the barrel on firing assists in counteracting the rearward energy of discharge, thus reducing recoil.

Still another object of the invention is to provide a handgun of the type described wherein the barrel travels forwardly in a straight line to accomplish ejection of the spent cartridge and recharging of the chamber.

Still another object of the invention is to provide a semi-automatic handgun wherein the chamber end of the

barrel is positioned to the rear of the cartridge magazine, when the barrel is in the battery position, resulting in a longer barrel without increasing the overall length of the weapon, resulting in increased energy and velocity.

Still another object of the invention is to provide a semi-automatic handgun wherein the cartridges are elevated from a cartridge magazine horizontally and directly in line with the bore thereby eliminating ramp charging to reduce the chances of jamming.

Still another object of the invention is to provide a semi-automatic handgun including a cartridge magazine which may be loaded straight downwardly.

Still another object of the invention is to provide a semi-automatic handgun which is economical of manufacture, durable in use and refined in appearance.

These and other objects will be apparent to those skilled in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front perspective view of the handgun of this invention;

FIG. **2** is a front view of the handgun;

FIG. **3** is a side view of the handgun;

FIG. **4** is a partial vertical sectional view of the handgun;

FIG. **5** is a partial exploded view of the handgun;

FIG. **6** is a partial sectional view of the handgun;

FIG. **7** is a top elevational view of the trigger, bow assembly, sear and hammer;

FIG. **8** is a side elevational view of the trigger, bow assembly, sear and hammer of FIG. **7**;

FIG. **9** is a top elevational view of the handgun;

FIG. **10** is a top elevational view of the handgun illustrating the relationship of the barrel housing and hammer safety;

FIG. **11**A is a sectional view illustrating the handgun with the barrel in its fully forward position;

FIG. **11** B is a partial side view of the handgun illustrating the ejection system;

FIG. **12**A is a sectional view illustrating the hammer in its fully cocked position with the sear maintaining the hammer in its fully cocked position; FIG. **12**B is a view similar to FIG. **12**A except that the trigger has been moved rearwardly to disengage the sear from the hammer;

FIG. **12**C illustrates the hammer being moved to its de-cocked firing position;

FIG. **13**A illustrates the handgun in its battery position with the hammer in a de-cocked position;

FIG. **13**B illustrates the trigger bow assembly being moved backwardly or rearwardly to cock the hammer;

FIG. **13**C illustrates the bow assembly having been moved further rearwardly from that of FIG. **13**B to permit the hammer to be driven to its firing position.

FIG. **14** is a rear sectional view of the cartridge magazine and its relationship to the frame as the magazine is being inserted into the handgun;

FIG. **15** is a view similar to FIG. **14** except that the magazine is in its fully inserted position to allow the uppermost cartridge to be fed into the breech of the handgun;

FIG. **16**A is partial perspective view of the rearward end of the barrel with the grip portion being removed therefrom; and

FIG. **16**B is a rear view of the structure of FIG. **16**A.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The semi-automatic handgun of this invention is referred to generally by the reference numeral **10**. Although the weapon disclosed herein is ideally suited for use as a handgun, it is possible that certain of the mechanisms thereof could also be used in weapons other than handguns. Handgun **10** generally includes a frame **12** including a grip **14**, trigger guard **16**, magazine release button **18**, and an opening **20** extending upwardly into the lower end of the grip **14** designed to receive a cartridge magazine or clip **22**.

Magazine **22** includes a housing **24** having a follower spring **26** provided therein for urging the cartridges **28** upwardly in a substantially horizontally disposed condition so that they will be aligned with the bore of the barrel as will be described hereinafter. For purposes of description, magazine **22** will be described as including a forward end **30**, rearward end **32**, and opposite sides **34** and **36**. The upper end of side **34** includes an inwardly and upwardly extending portion **38** while the upper end of side **36** includes an upwardly and inwardly extending portion **40**. Lip **42** is provided on the upper end of upwardly and inwardly extending portion **40** and is designed to engage the lug **44** provided on the barrel housing as the magazine is inserted into the handgun. The portion **38** of the side **36** is preferably flexible and yieldably maintains the cartridges **28** within the magazine **22**, as illustrated in FIG. **14**. As the magazine **22** is moved to its completely inserted position, lip **42** engages lug **44** which causes portion **40** to deflect outwardly thereby permitting the cartridges **28** to pass from the upper end of the magazine into the guides **48**. The flexible characteristic of the portion **40**, which may be comprised of plastic or metal, enables the cartridges **28** to be inserted directly downwardly into the magazine when the magazine is being loaded. The relationship of portions **38** and **40** also permits the cartridges to pass directly vertically upwardly from the magazine in a horizontally disposed condition.

The barrel housing **46** includes a forward end **48** and a rearward end **50**. The lower end of housing **46** is open and communicates with a breech **52** which also serves as an ejection port. Barrel housing **46** includes an elongated cylindrical opening **54** which extends forwardly from the forward end of the breech **52** to the forward end **48** of the housing **46**. A cylindrical opening **56** is formed in barrel housing **46** and extends rearwardly from the rearward end of breech **52**. The rearward end of the opening **56** defines a shoulder **58**. Opening **60** is formed in barrel housing **46** rearwardly of opening **56**. Barrel housing **46** is provided with dovetail grooves **62** and **64** formed therein adapted to receive sights **66** and **68** therein, respectively. Barrel housing **46** is provided with a pair of slots **70** on opposite sides thereof which extend through the side walls of the barrel housing **46** and which are adapted to receive the legs **72** of retaining clip **74**. A hook or lug **76** extends downwardly from the rearward end of barrel housing **46** and is adapted to be received in a retaining slot **78**, as illustrated in FIG. **5**. Screw **80** extends downwardly through the barrel housing **46** and is threadably received in an internally threaded opening **82** to enable the barrel housing **46** to be selectively removably secured to the frame **12**.

The numeral **84** refers to an elongated barrel having a forward end **86** and a rearward end **88**. Barrel **84** is provided with a conventional rifled bore **90** formed therein which extends forwardly from a cartridge chamber **92** formed at the rearward end of the bore **90**. Barrel **84** is provided with an enlarged diameter portion **94** forwardly of its rearward

end, as best seen in FIG. **5**. The barrel **84** has a drag link groove **96** formed therein and a trigger block groove **98** formed therein. Barrel **84** is provided with gas ports **100** formed therein adjacent the forward end thereof which extend inwardly therethrough for communication with the bore **90**. The forward end of barrel **84** has an annular groove **102** formed therein which is adapted to receive retaining clip **104**. The rearward end of barrel **84** has a pair of longitudinally extending grooves **106** formed therein on opposite sides thereof adapted to receive the lower ends **108** and **110** of barrel grip portion **112**.

Barrel **84** is inserted into the forward end of opening **54** in barrel housing **46**. Barrel spring **114** is slipped over the forward end of the barrel **84** so that its rearward end engages the shoulder **116** at the forward end of the enlarged diameter portion **94**. Barrel stop **118** is then slipped over the forward end of the spring **114** and is held in position by means of the retaining clip or ring **74**, the legs of which are inserted into the openings **70** so as to be received in the openings **120** formed on opposite sides of the forward end of the barrel stop **118**. Muzzle sleeve **122** is then slipped over the forward end of the barrel **84** forwardly of the forward end of spring **114**. The retaining clip **104** is then inserted into the annular groove **102** to maintain muzzle sleeve **122** in position.

The numeral **124** refers to a piston which is movably mounted in opening **56**. A spring-loaded firing pin **128** is movably mounted within the piston **124** and is adapted to protrude forwardly from the forward end of piston **124** when the hammer **130** strikes the rearward end of the firing pin **128**. Hammer **130** is pivotally mounted at the upper rearward end of the frame **12** at **132**. The lower rearward end of hammer **130** is pivotally connected to the upper rearward end of hammer spring guide **134** at **136**. Hammer or main spring **138** is mounted on the lower end of hammer spring guide **134** to urge or drive the hammer **130** from its rearward cocked position to its forward firing position. A rotating bolt **140** is selectively rotatably mounted in the frame **12** adjacent the hammer spring guide **134**, as seen in FIG. **4**, to selectively prevent the movement of the hammer spring guide **134** thereby preventing the hammer **130** from moving from its cocked position to its firing position. Bolt **140** is provided at the inner end of safety/de-cocker **142** which is positioned adjacent the upper rearward end of the exterior surface of the frame **12**, as seen in FIG. **1**. The numeral **144** refers to a generally conventional grip safety which prevents upward movement of the hammer spring guide **134** when it is in its "on" position of FIG. **4**. When the grip safety **144** is depressed and the safety/de-cocker is in the "off" position, the hammer **130** will move from its fully de-cocked position to its firing position when the trigger is pulled.

Trigger **146** is pivotally connected at its upper end to the frame **12** at **148** and is enclosed within a trigger guard **150**. Trigger **146** is prevented from moving rearwardly by means of a trigger safety **152**. Trigger safety **152** includes a spring-loaded trigger block **154**. As the barrel **84** moves to its fully closed or battery position, the front end of the trigger block groove **98** (FIG. **4**) causes the trigger block **154** to retract against spring tension so that the trigger may be moved rearwardly.

The numeral **160** refers to a bow assembly which has its forward end pivotally connected to trigger **146** at **162**. A cocking pawl **164** is pivotally connected to the rearward end of bow assembly **160** at **166**. Cocking pawl **164** is provided with a pair of lugs **168** and **170** formed therein which define an arcuate groove **172** therebetween. As seen, spring **174** normally urges cocking pawl **164** in a clockwise direction, as viewed in FIG. **6**. The lower forward end of hammer **130** is provided with a pair of cams **176** and **178** formed at one side thereof which define an arcuate groove **180** therebetween, as also seen in FIG. **6**. A spring-loaded sear **182** is pivotally mounted in the frame **12** at **184**. Bow assembly **160** includes a rearwardly extending bearing lug **186** which is adapted to engage the lower end of sear **182** to move the sear **182** out of engagement with the lower forward end of the hammer **130**, as will be described in greater detail hereinafter. As seen in FIG. **7**, the sear **182** is adapted to engage a shoulder **188** formed on the lower forward end of the hammer **130** laterally of the pawl **164** and laterally of the lugs **176** and **178**.

As seen in FIG. **10**, the numeral **190** refers to a spring-loaded hammer safety which is pivoted to the frame **12** at **192**. The forward end of safety **190** has a shoulder **194** protruding therefrom while the rearward end of the safety **190** has a laterally extending portion **196**. Laterally extending portion **196** of safety **190** is positioned in the forward path of hammer **130** until the barrel **84** is in its completely closed position. As the barrel **84** moves rearwardly, the barrel **84** engages shoulder **194** to pivot safety **190** in a counterclockwise direction, as viewed in FIG. **10**, so that the laterally extending portion **196** is moved laterally out of the forward path of the hammer **130**.

The ejection system of this invention is best illustrated in FIGS. **11A** and **11B**. Ejection system **198** includes an ejector spring **200** and an ejector drag link **202**. The ejector drag link **202** has its forward end movably received in the groove **96**, as illustrated in FIGS. **11A** and **11B**.

The operation of the handgun is as follows. The cartridge or ammunition magazine is loaded by successively inserting cartridges **28** straight down through the upper end of the magazine. As the cartridge is lowered into the magazine, the cartridge engages the loading lip **42** which deflects outwardly causing the upper end portions **38** and **40** to deflect outwardly so that the cartridge may move downwardly into the magazine compressing the magazine follower spring **26**. Additional cartridges are loaded in the same manner and are stacked as shown in FIG. **15**.

To load the weapon, the magazine **22** is inserted in the bottom opening of the grip of the frame and pushed upwardly until secured by the clip release **18** being received by the notch **204** which is formed in the forward end of the magazine **22** (FIG. **6**). Simultaneously with the loading, the lip **42** engages the lug **44** in the frame causing the upper end portions of the magazine to separate to allow the uppermost cartridge to engage the guides **48** in the barrel housing **46**.

To manually charge the chamber, the barrel **84** is grasped at the barrel grip portion **112** and pulled forward which opens the breech and compresses the barrel spring **114**. As the breech is fully opened, the uppermost cartridge **28** is free to move upwardly in the guides **48** until stopped by the extractor **208** which is pivotally secured to the frame **12** at **210**. The rearward end of the extractor **208** is urged upwardly by the spring **212**. The forward end of the extractor **208** includes downwardly extending extractor arm **214** which is received in the groove **216** of the cartridge **28**. At this time, the cartridge **28** is in direct alignment with the centerline of the bore.

Upon depression of the barrel release **218**, the barrel spring **114** drives the barrel **84** rearwardly enclosing the cartridge. The succeeding cartridge is depressed downwardly into the magazine **22** by the bottom of the breech end of the barrel **84**.

The hammer **130** is then manually retracted into its firing position. At this point, the handgun cannot be fired unless the

barrel is fully home in the battery position due to the hammer safety assembly **190**. Hammer safety **190** blocks movement of the hammer **130** until the rearward end of the barrel **84** engages the forward end of the hammer safety which rotates the safety **190** outwardly against spring tension to clear the path of the hammer **130**. Another safety feature which prevents firing if the breech is even partially open is the trigger safety **152** is the fact that the trigger **146** is prevented from movement by the spring-loaded trigger block **154**. As the barrel moves to the battery position, the front end of the slot **98** in the barrel **84** causes the trigger block **154** to retract against spring tension thereby clearing the hammer to rotate. A further safety feature is the grip safety **144**. The grip safety **144** is spring-loaded to cause the grip safety to rotate outwardly from the frame wherein a lug on the grip safety overrides a lug on the hammer spring guide **134** to prevent upward movement and rotation of the hammer. Yet another safety feature is the safety/de-cocker **142**. The safety/de-cocker **142** must be in the "off" position so that the rotating bolt **140** provides clearance for the hammer spring guide **134** to move upwardly allowing the hammer to rotate.

When all of the safety conditions are met, the trigger **146** may be depressed which causes it to rotate and move the bow assembly **160** rearwardly until the bearing lug **186** engages the sear **182** causing it to rotate and release the spring-loaded hammer **130**. This operation is known as a single action operation and the hammer would have already been cocked prior to the trigger being depressed or moved rearwardly (FIGS. **12**A and **12**B).

The firing mechanism may also be operated in a double action fashion as will now be described. The trigger **146** is depressed thereby compressing the trigger spring **218** causing it to rotate and move the bow assembly **160** rearwardly until the cocking pawl **164** engages cam **176** on the hammer **130**. This action causes the hammer **130** to rotate to a firing position. Consequently, the cocking pawl **164** rides up the cam **176** until it overrides the cam thereby releasing the hammer to fall until engaged by the sear **182**. Further, rearward movement of the bow **160** causes the lug **186** to engage the lower end of sear **182** causing it to rotate counterclockwise releasing the hammer **130**.

After the hammer has been released through a single action or a double action operation, as the hammer **130** falls due to the action of the hammer spring **138**, the hammer strikes the spring-loaded firing pin **128** causing it to strike the cartridge primer and simultaneously drive the piston **124** firmly against the base of the cartridge. As the cartridge discharges, the energy drives the breech piston **124** rearwardly a fraction of an inch until stopped by shoulder **58** of the opening **56**. Simultaneously, the hard contact between the breech piston **124** and the shoulder **58** causes the head of the firing pin to strike the hammer **130** causing it to rotate rearwardly and thereby re-cocking the weapon. Return movement of the hammer **130** is stopped by the spring-loaded sear **182** until subsequently released by the trigger mechanism.

As the bullet is driven through the muzzle, a portion of the gas is released through the gas ports **100** near the muzzle into the circular cavity between the fixed barrel stop **118** and the barrel sleeve **122**. The gas pressure forces the barrel sleeve **122** and barrel **84** to move forwardly against the barrel return spring **114** until stopped by the rear shoulder of the barrel stop **118**. The spent cartridge case is held in the open breech by the extractor **208**.

As the breech is opened, the chamber end of the barrel **84** passes over the end of the ejector spring **200** which releases the spring tension to strike and eject the spent cartridge case, as seen in FIG. **11**B. The ejector spring **200** is retracted by the forward movement of the drag link **202** which contains an aperture **203** through which the ejector spring **200** passes. The drag link **202** is pulled forward by engagement of a protruding lug on the forward end against a shoulder **205** on the lower portion of the barrel **84**. As the ejector spring **200** is retracted and with the breech open, the succeeding round of ammunition (cartridge) is free to move upwardly from the magazine until it is stopped by the extractor **208**.

Thus it can be seen that the invention accomplishes at least all of its stated objectives.

I claim:

1. A semi-automatic handgun, comprising:

a frame, having upper and lower ends, including a grip, a trigger guard, a trigger, and a cartridge magazine removably mounted in said grip;

said cartridge magazine adapted to have cartridges contained therein in a vertically stacked manner;

a barrel housing, having rearward and forward ends, on the upper end of said frame;

said barrel housing having a breech formed therein which has rearward and forward ends;

said breech being in communication with said cartridge magazine whereby cartridges may be delivered to said breech;

said barrel housing having an ejection port formed therein which communicates with said breech;

said barrel housing having a first elongated opening formed therein which extends forwardly from said forward end of said breech, to said forward end of said barrel housing;

said barrel housing having a second elongated opening formed therein which extends rearwardly from said rearward end of said breech towards said rearward end of said barrel housing;

an elongated barrel, having forward and rearward ends, movably mounted in said barrel housing between a rearward battery position in said barrel housing to a forward position in said barrel housing;

said barrel having a rifled bore extending therethrough;

a barrel spring in said barrel housing which yieldably urges said barrel to its said rearward battery position;

said barrel closing said breech when in its rearward battery position;

a spring-loaded firing pin positioned in said second elongated opening in said barrel housing;

a hammer pivotally mounted on said frame which is movable between a rearward cocked position and to a forward firing position;

said trigger being operatively connected to said hammer by means of a sear assembly;

a hammer spring in said frame connected to said hammer for driving said hammer from its rearward cocked position to its forward firing position when said trigger is operated;

said hammer striking said firing pin when said hammer is driven from its said rearward cocked position to its said forward firing position;

said rearward end of said barrel including a chamber for receiving the uppermost cartridge in said cartridge magazine when said barrel is moved from its said forward position to its said rearward position so that the cartridge will be aligned with said firing pin;

said firing pin causing the detonation of the cartridge in said barrel when said hammer strikes said firing pin;

the detonation of said cartridge causing said barrel to move from its said rearward position to its said forward position;

a piston, having rearward and forward ends, movably mounted in said second elongated bore in said barrel housing;

said piston being movable between a forward position and a rearward position;

a spring urging said piston to its said forward position;

said forward end of said piston being closely positioned adjacent the cartridge in said barrel;

said hammer being positioned rearwardly of said rearward end of said piston when said hammer is in its said forward firing position;

said firing pin extending through said piston;

the detonation of the cartridge in said barrel causing said piston to move from its forward position to its said rearward position thereby causing said firing pin to move said hammer from its said forward firing position to its said rearward cocked position.

2. The semi-automatic handgun of claim **1** wherein said barrel travels forwardly and rearwardly in a straight line.

3. The semi-automatic handgun of claim **1** wherein the rearward end of said chamber, when said barrel is in its said rearward position, is positioned near the rearward end of said cartridge magazine.

4. The semi-automatic handgun of claim **1** wherein the forward movement of the barrel on firing counteracts at least some of the rearward energy of discharge thereby reducing the recoil of the handgun.

5. The semi-automatic handgun of claim **1** wherein said barrel spring is positioned at said forward end of said barrel to yieldably resist the forward movement of the barrel.

6. The semi-automatic handgun of claim **1** wherein the cartridges in said magazine are elevated from the magazine in a horizontal attitude so as to be directly in line with the bore of said barrel.

7. The semi-automatic handgun of claim **1** wherein said magazine includes flexible closure means at the upper end thereof which yieldably maintains the cartridges therein.

8. The semi-automatic handgun of claim **7** wherein said flexible closure means permits the cartridges to be inserted into the magazine in a vertically downwardly direction.

9. The semi-automatic handgun of claim **1** wherein said barrel has a gas vent means formed therein adjacent the muzzle end thereof which communicates with a forwardly extending cavity formed in said barrel housing; said barrel having a sleeve positioned on its forward end which normally seals the forward end of said cavity; the exhaust of combustion gases through said vent means, upon firing into said cavity and against said sleeve causing said barrel to move to its said forward position.

10. A semi-automatic weapon, comprising:

a frame;

a barrel housing, having a rearward end and a forward end, mounted on said frame;

a barrel, having a rearward end and a forward end, movably mounted on said barrel housing;

said barrel having a cartridge chamber at its rearward end for receiving a cartridge therein;

said barrel being movable between a rearward position and a forward position with respect to said barrel housing;

said barrel normally being in said rearward position;

said barrel moving forwardly in a straight line from its said rearward position upon firing of the cartridge in said chamber to counteract the rearward energy of discharge thereby reducing recoil;

and a firing hammer which is re-cooked upon the cartridge being fired by a piston and firing pin assembly which is positioned between the rearward end of said barrel and said firing hammer.

11. The weapon of claim **10** wherein the forward movement of the barrel also accomplishes ejection of the spent cartridge and reloading of said chamber.

12. The weapon of claim **10** further including means for firing the cartridge in a single action manner.

13. The weapon of claim **10** wherein the forward movement of said barrel is caused by the discharge of combustion gases from the bore of said barrel.

14. The weapon of claim **13** wherein said piston and firing pin assembly include a firing pin which is movably positioned in a piston and which movably protrudes forwardly and rearwardly therefrom.

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